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ABSTRACT

Funded by the Bureau of Adult, Vocational, and Technical Education of the Office of Education, the Adult Performance Level (APL) study has as its objectives: to describe adult functional literacy in pragmatic, behavioral terms and to develop devices for the assessment of literacy which will be useful at a variety of operational levels. Two years of research has led to three conclusions: literacy is a construct which is meaningful only in a specific cultural context; literacy is two-dimensional, rather than uni-dimensional; and literacy is a construct which is directly related (in a mathematical sense) to success in adult life. To define success the APL uses an index which is a composite of income, level of education, occupational prestige, and a measure of expressed personal satisfaction with one's vocation and general status in life. In order to estimate population parameters and to perform a final validation of the items and objectives, a national survey on the areas of occupational knowledge and consumer economics, conducted by Opinion Research Corporation according to APL specifications, has just been completed. The results suggest that far more adults are "illiterate," in the sense of being able to apply skills to problem areas which are derived from pragmatic adult requirements, than was expected. (WR)

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# FUNCTIONAL LITERACY FOR ADULTS

## A STATUS REPORT OF THE ADULT PERFORMANCE LEVEL STUDY

### Introduction and Objectives

Funded by the Bureau of Adult, Vocational, and Technical Education of the Office of Education, the Adult Performance Level (APL) Study has as its objectives: (1) to describe adult functional literacy in pragmatic, behavioral terms, and (2) to develop devices for the assessment of literacy which will be useful at a variety of operational levels.

### Theoretical Framework - Toward a Definition of Adult Literacy

Since September of 1971, the APL (Adult Performance Level) Study has been analyzing the components of adult literacy as a prerequisite to constructing more useful measures of adult literacy. Two years of research has led to three crucial conclusions:

1. "Literacy" is a construct which is meaningful only in a specific cultural context. A corollary of this conclusion is that, just as literacy is culture-bound, it is perhaps even more closely bound to the technological state of a particular culture. The person who is "literate" in one culture may be "illiterate" in another. Furthermore, as technology changes, the requirements for literacy change.

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This conclusion has tremendous implications for the assessment of literacy. It is obvious that any complex society, such as that of the United States, is composed of many different subcultures. In this country, we give these subcultures ethnic tags, such as "Black", "Chicano", "White", "Oriental", and "Indian"; or demographic tags, such as "rural" or "urban"; or geographic tags, such as "Southern" or "Northeastern"; or religious tags, such as "Catholic", "Protestant", or "Jewish"; or even tags which are combinations of some of those mentioned above, such as "Southern rural Black", "White Anglo-Saxon Protestant", or "Urban Jew", or "Appalachian poor White."

The question then becomes, is it necessary to develop a measure of literacy which is unique to each subculture, or can a single measure which identifies cultural requirements which are common to the preponderance of the population be created? Evidence gathered by the APL staff to date indicates that the latter strategy is most viable. Even though, for example, ethnic differences do exist on APL measures of literacy, the important relationship of literacy to different indices of success still holds true within ethnic groups. More will be said about this relationship in conclusion 3.

The second part of the first conclusion, that literacy is technology-bound, means that any method of assessing adult literacy levels must provide for subsequent redefinition of both the content and the levels of literacy. Without this provision, we may very well find ourselves claiming that being able to track and kill the sabre-toothed

tiger is a requirement for adult literacy when, in fact, there are no sabre-toothed tigers left to kill. The implication, of course, is that literacy must be redefined as technology changes over time. The APL Study has developed a methodology which will allow for this redefinition.

2. "Literacy" does not consist just of a single skill, or even a set of skills. Literacy is two-dimensional, rather than uni-dimensional. Literacy is best defined as the application of a set of skills (dimension 1) to a set of general knowledge areas (dimension 2) which result from the cultural requirements that are imposed on members of a culture. The APL Study uses this two-dimensional model as the basic framework for generating the essential elements of adult literacy, which are coping behaviors called "performance requirements" or "tasks". This model is illustrated in Figure 1.

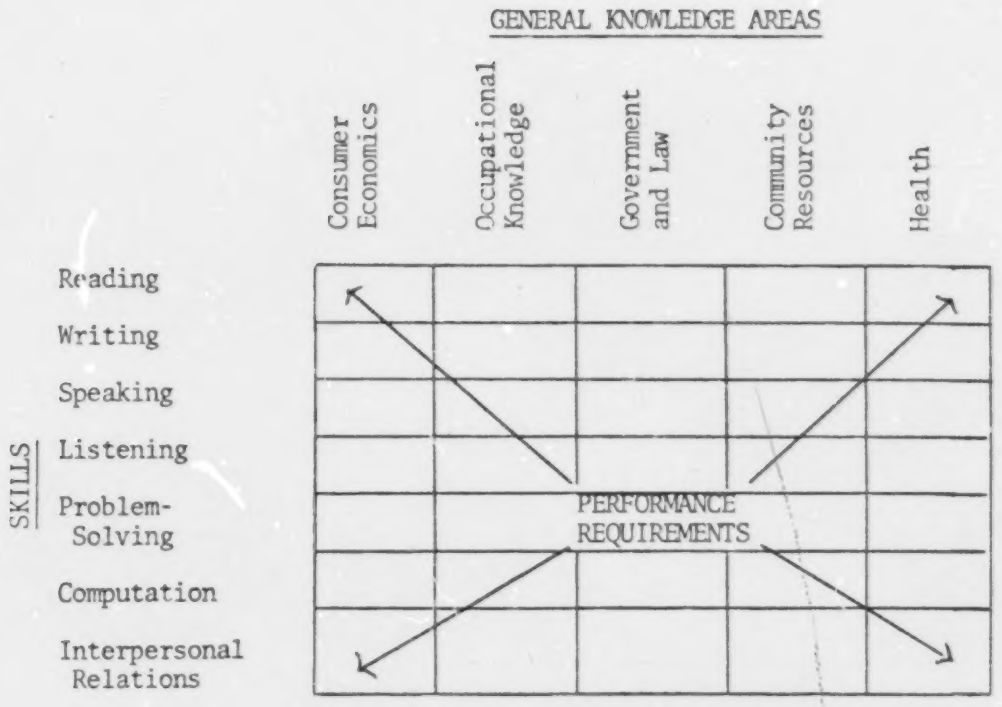


Figure 1. The APL Literacy Model

APL research indicates that literacy is composed of an application of the communications skills (reading, writing, speaking, listening), computation, problem solving, and interpersonal relations to the general knowledge areas of occupational knowledge, consumer economics, community resources, government and law, and health. For more details concerning these performance requirements, see Northcutt, et al, The Adult Performance Level Study - First Annual Report, January, 1972.

3. "Literacy" is a construct which is directly related (in a mathematical sense) to success in adult life. This is technically not

a conclusion of APL research, but is the basic operating assumption underlying all APL research activities. However we define literacy, we expect more literate adults to be more "successful". After all, if we did not expect this relationship to be true, why attempt to increase the level of literacy in the first place?

But what is meant by "success"? To some, being successful means getting a job -- to others, it may mean losing a job. To some, success means getting off a welfare roll -- to others, success may mean arranging things so that one receives a larger welfare payment. To some, success means learning to read well enough to understand a want ad in a newspaper -- to others, success may mean reading well enough to score high enough on the Law School Examination Test to be admitted to the country's most prestigious law school. And to some, success is equated with becoming more "self-actualized" while to others, success may mean simply being able to stay alive for another week.

The litany could continue indefinitely, and each example could give a plausible explanation of success. The APL Study has drawn from a variety of educational, sociological, economic and behavioral studies to analyze different criteria of success. Based on this experience, the APL Study uses an index which is a composite of: (1) income; (2) level of education; (3) occupational prestige; and (4) a measure of expressed personal satisfaction with one's vocation and general status in life (irreverently referred to by some APL staff as the "happiness index").

The assumption that literacy is directly related to success also has great implications for developing a measure of literacy. The assumption implies that not only must the measure be derived from performances which are taken from the adult milieu (rather than from an elementary or secondary school frame of reference), but that performance on such a measure must be positively correlated to success. The APL Study has developed a pool of objectives-based items, keyed to the APL skills and general knowledge areas outlined in 2 above, which have been shown to be positively correlated to different measures of adult success.

Current Research - A National Survey of Adult Performance in Two General Knowledge Areas

As mentioned earlier, the APL Study has developed a system of adult literacy objectives and accompanying test items which are keyed to the four APL literacy skills and the five APL general knowledge areas. In order to estimate the population parameters and to perform a final validation of the items and objectives, a national survey on the areas of Occupational Knowledge and Consumer Economics has just been completed. (National data for the other three areas will be collected during the remainder of 1974.) The following is a brief summary of the survey design:

General Methodology - The survey was conducted by Opinion Research Corporation, Princeton, New Jersey, according to specifications set by

the APL staff. ORC formatted and printed field materials for administration of the items to nationwide samples of adults by interviewers. ORC prepared instructions for interviewers, supervised the field work, edited the correctness of respondent's performance on a number of tasks called for in the test, and reproduced results on punch cards and magnetic tape. Testing started on December 8, 1973, and was completed on January 29, 1974.

Sample Design

Description of the Master Sample

The ORC Master Probability Sample is designed to represent the continental United States, excluding Alaska and Hawaii.

In its basic design the sample consists of 360 counties, arranged in six "blocks" of 60 counties each. Each of the six blocks is an independent subsample representing the United States. The counties making up each block were chosen at random with probability proportional to size of population from the 3,070 counties that made up the nation at the time the sample was drawn.

Prior to the selection of sample counties, geographical stratification was introduced. All 3,070 counties were grouped into 171 areas of contiguous counties, as designated by the Office of Business Economics of the U.S. Department of Commerce. The 171 area groupings were then arranged in geographical order from north and east to south and west -- from Maine to California -- and within each area the counties were arranged in descending order of population.

Within the resulting array the 60 individual sample counties making up each block were selected by systematic methods, with random start points, to insure representative geographical distribution. The process was carried out six times to provide the six blocks that make up the entire master sample. The selections were made, and documented, on an IBM 360/65 digital computer.

It will be noted that in this process the sampling unit is a county, and that a given county may appear in the sample more than once, either because of its large population or because it was selected by chance in more than one of the six blocks.

The sample is updated annually to reflect changes in population. The latest updating reflects 1973 population estimates.

The sample has a number of desirable properties:

1. It can be used as a whole, or subsamples can be taken by choosing any one or any combination of the six blocks into which the master sample is divided. Each of the six blocks is itself a national probability sample. Such subsamples are mutually consistent, and can be added or compared. This layout for the master sample provides flexibility in size, so that sample size in each instance can be varied to suit the need for precision of any particular research inquiry.

2. The whole sampling method is both statistically and administratively of maximum efficiency. Its intent is to provide the most reliable data from any given expenditures.

3. The sample is fully documented, and reproducible in a scientific sense. It can be updated in a straight-forward way, easily and logically, as the population changes with time.

Within each county a minor civil division was selected, with probability proportionate to size, and defined to be the primary sampling unit.

The procedure consists of selecting a listed household using random techniques. Nonoverlapping telephone directories are used for locating starting points. No interviews are conducted in these households, for the interviewer begins her screening at the household immediately to the left of the listed one.

Each starting point effectively determines a neighborhood in which interviewing will be conducted. Since there is local variation in the incidence of listed households, weighting is introduced to equalize the probabilities of selecting starting points.

Note that, although telephone directories are used to locate starting points in the field interviewing, the sample is in no sense a sample of telephone-owning households. Nontelephone households are included in their correct proportions, and the sample is properly representative of all segments of the United States population.

Application of the Master Sample to the APL Study

The universe for the two test administrations was defined as the nationwide population 18 through 65 years of age, living in households, who are physically able to read and write.

Three blocks of the master sample, 60 locations in each, were employed in the study. In each of these 180 locations two starting points were selected, one for the Occupational Knowledge Test and one for the Consumer Economics Test.

In each location a fixed number of housing units were assigned for contact, beginning at the housing unit adjacent to the starting point and continuing on a fixed route.

Within households, respondents were selected for testing following probability sampling procedures.

Up to two calls were made at each household, where necessary, to complete the test with the designated respondent.

At the conclusion of each test, respondents were asked the likelihood of their being away from home at the time of the interviewer's visit. This information provided input for a weighting procedure that corrects for "at-homeness."

As an incentive for cooperation, respondents were given silver dollars in presentation cases.

Weighting

Weighting was introduced to correct for:

- local variation in the incidence of telephone listed households
- different probabilities of selecting respondents in households with varying numbers of eligible respondents
- the probability of a respondent's being at home at the time of the interviewer's visit
- varying completion rates in certain subgroups of the population: region, education, family income, age and sex.

Selected Survey Results - Analysis of the survey data has only just begun, and a complete report is still several months away. However, the following is a summary of results for a portion of the items dealing with the general knowledge areas of occupational knowledge and consumer economics (precision is 4% at a 95% confidence interval).

--- 17 percent of the sample was not able, given a series of four newspaper "help wanted" advertisements, to determine which one was placed by a private person, rather than a corporation or public institution. This result yields an estimated 20,071,000 adults who are not able to perform this task.

--- Given monthly earnings statement containing the gross salary, deductions by type, and net salary, only 74 percent of the sample was able to determine the total amount of deductions. Further, 33% of the sample, or a projected 38,960,000 persons are not able to interpret the earnings statement well enough to locate the deduction for social security.

--- Thirty-six percent of the sample, given a W-4 form and information concerning the number of dependents, were unable to read, write, or compute well enough to enter the correct number of exemptions in the appropriate block of the form.

--- Only 56 percent of the sample, when given a series of newspaper "help wanted" advertisements, were able to correctly match personal qualifications to job requirements. These results produce an estimated 52 million adults who are not able to perform the task as required by the survey.

--- When given an incomplete business letter, only one-fith of the sample was able to complete the "return address" section without making an error in form, content, spelling, or punctuation.

--- Twenty-two percent of the sample was unable to address an envelope well enough to insure it would reach the desired destination, and twenty-four percent was unable to place a return address on the same envelope which would insure that it would be returned to the sender if delivery were not possible. These results indicate that an estimated 26-28 million adults aren't able to address an envelope well enough to insure the letter will not encounter difficulties in the postal system.

--- About one-fith of the sample could not read an "equal opportunity" notice well enough to identify a verbal statement which defined its meaning.

--- About one-fourth of the sample, or a projected 26 million adults, could not distinguish the terms "gross" and "net" correctly when given a simple situation involving total pay and pay after deductions.

--- Almost one-fifth of the sample, or a projected 22½ million adults, weren't able to read and interpret a tabular payment schedule well enough to determine the monthly payment for a given amount of indebtedness.

--- A surprising 73% of the sample, or a projected 86 million adults, weren't able to accurately calculate the gasoline consumption rate of an automobile, given odometer readings and fuel consumption.

--- Less than 40% of the sample when given a catalogue advertisement series of "for sale" ads which contained a notice for the same

appliance, was able to correctly calculate the difference in price between a new and used appliance.

--- More than three-fourths of the sample was unable to read, write, and compute well enough to correctly enter one total cash price for a mail order, given an advertisement with price information and a mail order form.

--- Twenty-nine percent of the sample, or a projected 34.2 million adults, were unable to order a meal for two persons not exceeding a set amount, given a restaurant menu.

--- Slightly more than one-fifth of the sample, or a projected 25.9 million adults, were unable to write a check on an account without making an error so serious that the check would not be processed by the bank, or would be processed incorrectly.

--- Only two-thirds of the sample was able, given three boxes of cereal displaying the name, net weight, and total price of the contents, to determine the brand which had the lowest unit cost.

--- Over forty percent of the sample, or a projected 48.4 million adults, was unable to determine the correct amount of change on a purchase, given a cash register receipt and the denomination of the bill used to pay for the purchase.

## Future Research

These results, with the results from dozens of other tasks not reported here, would suggest that far more adults are "illiterate", in

the sense of being able to apply skills to problem areas which are derived from pragmatic adult requirements, than one might expect. As was noted earlier, a second national adult survey of performance on tasks keyed to the other three APL general knowledge areas will begin shortly. When this phase is completed, the set of objectives, "test items", and national estimates of adult performance related to these objectives should be a valuable resource for planning, developing, or evaluating educational programs on a variety of levels.